

Appendix 1: Methods and results of literature search

Studies were obtained from computerized searches of multiple electronic bibliographic databases. Sources include: Ovid Medline(R) (1950-Feb. 2009), AARP Ageline (1978 – Feb. 2009), AccessScience (current topics, updated daily), Annual Reviews (1930 – Feb. 2009), the National Research Council of Canada's National Science Library Catalogue (1924 – Feb. 2009), Cochrane Library (1960- Feb. 2009), Clinical Evidence (Jan. 1994 – Feb. 2009), Proquest Dissertations & Theses Database (1998- Feb. 2009), EMBASE (1980- Feb. 2009), HealthSTAR (1999 – Feb. 2009), MEDLINE (1950 – Feb. 2009), Scopus (1966 – Feb. 2009), PASCAL (1987 – Feb. 2009), the Statistics Canada "Health in Canada" website (1990 - Feb. 2009), and Scholars Portal (1960 – Feb. 2009).

Studies examining the thermoregulatory response related to pre-specified categories (aging, obesity, diabetes, hypertension, cardiovascular disease, respiratory disease) were sought for the review. These categories have been identified in epidemiological studies as being risk factors for heat injury.¹⁻⁴ While we realize that other sub-populations such as people with alcoholism and severe mental disorders may also demonstrate vulnerability to heat exposure, a review of these groups is outside of the scope of this paper.

The following search terms were used: diabetes, type 1 diabetes, type 2 diabetes, NIDDM, IDDM, heat illness, heat stroke, dehydration, thirst, heat exposure, mortality, morbidity, prevalence, thermoregulation, age, elderly, obesity, fatness, hypertension, cardiovascular disease, lung disease, COPD, high blood pressure, fitness, vulnerable, body heat storage, body temperature, core temperature, socio-economic status, income, heat wave, education. The reference lists of major textbooks, review articles, and of all included articles were subsequently searched by hand to find potentially relevant studies meeting the requirements for inclusion in our review. Whenever possible, missing articles and unpublished literature were obtained from experts. All searches were limited to human subjects.

The search retrieved over 4000 abstracts. The majority of these did not deal with thermoregulatory mechanisms and were therefore discarded. Full manuscripts were obtained if the abstract suggested the article dealt with thermoregulation and/or heat-related morbidity in human participants from our pre-selected vulnerable groups. Case studies were not included. Three reviewers independently assessed the quality of each article. The most recent and/or best quality studies (clearly described populations and methods, appropriate controls to limit variation between groups) were included. We did not find any randomized trials evaluating interventions to reduce the risk of heat injury in vulnerable populations. Most papers were either laboratory-based physiology studies, epidemiological or ecological time-series studies. The literature was unsuitable for meta-analysis, due to the lack of multiple studies with designs and outcomes sufficiently similar to one another for statistical pooling to be valid.

References

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